

67°; Fort Yuma, 107°, 67°; San Diego, 82°, 54°; Baton Rouge 102° on the 26th; the Army Surgeon states that this is the highest temperature of the year. *At high stations:* Mt. Washington, 58°, 21°; Cheyenne, 86°, 27°; Denver, 90°, 32°; Pike's Peak, 51°, 6°; Santa Fe, 82°, 38°.

Ranges of temperature.—The largest ranges of temperature for the month have occurred at the following stations: North Platte, 73°; Bismarck, 68°; Dodge City, 65°; Fort Sully, 61°; Cheyenne, 59°; Denver, 58°; Yankton, 56°; Fort Gibson, 55°; Breckenridge, 52°; Cairo, 50°. The smallest ranges are noted as follows: Key West, 16°; Eastport, 25°; Indianola, 26°; Cape Hatteras and Wood's Holl, 27°.

Frost and ice have been reported as follows: On the 2nd, in Iowa, Minn., Wis.; 3d and 5th, N. Y.; 6th N. Y., Mass., Conn., Penn., Utah; 10th, Iowa, Me.; 11th, Me.; 13th, Me., N. Y.; 14th, Miss.; 15th, Mich. Minn.; 16th, Ill., Mich., N. Y., Ohio; 19th, Wy. Ter.; 21st, Dak.; 22d, Va., Me.; 23d and 25th, Wis.; 26th Wis., Ind., Mo., Minn.; 27th, Mass., Mich., Iowa, Wis., Ind., Ohio, N. C.; 28th, Va., W. Va., Wis., Md., N. C., S. C.; 29th, Wis., Iowa, Kan., Neb., Dak., S. C.; 30th, Wis., Iowa, Kan., Mo., Neb., Minn., Tenn., Ark. Cal., Dak., Ohio, Ind.

PRECIPITATION.

The general distribution of rain and melted snow is shown upon chart No. III, from which it will be seen that the areas of largest precipitation have included the greater part of the Lower Lake Region and Atlantic States, as also a portion of the Northwest. The excess in the Atlantic States fell to a large degree during the passage of the hurricane No. VII of the 16, 17; that in the Lower Lake Region fell as long continued light rains from the 22nd to 30th, and as heavy rains on the 17th and 18th; that in the Northwest fell especially during the 5th to 9th, during the formation of low pressure No. V. Deficiencies of rain, fall are reported from the Eastern and Western Gulf States, in which regions the rain-fall has been less than two inches as compared with an average of five inches; in the same states during September, 1875, a very large excess was reported, but during September, 1873, a slight excess was reported, especially near the coast, and in September, 1874, an excess in the Western Gulf, but a deficiency in the Eastern Gulf States. On comparing Chart No. III with similar ones for 1873 and 74, a slight similarity is noticed in the distribution of the rain, in that the regions of greatest fall are along the Atlantic coast and in the Southwest and Northwest, with regions of light rain-fall between.

Largest Monthly Rain-falls.—The following stations report large total rain-falls: Cape Henry, Va., 14.90 inches; Capeville, Va., 10.70; Mt. Washington, N. H., 14.89; Cape Lookout, N. C., 14.09; Kitty Hawk, N. C., 13.79; Goldsboro, N. C., 12.62; Cape Hatteras, N. C., 11.69; Charleston, S. C., 11.26; Washington, D. C., 10.81; Baltimore, Md., 10.52; Fallston, Md., 12.95; New Market, Md., 10.64; Dover, Del., 12.46; West Chester, Pa., 12.33; Tarantum, Pa., 12.00; Carlisle, Pa., 11.34; Keokuk, Iowa, 11.08.

Smallest Monthly Rain-falls.—Stations reporting less than four-tenths of an inch are the following: Cheyenne, Wy. Ter., Yuma and Stanwix, A. Ter., and Campo, Cal., 0.00 inch.; San Diego, Cal., 0.03; Cambridge, Tex., 0.05; San Jose, Cal., 0.10; Fort Wallace, Kan., 0.15; Murphy, N. C., 0.20; New Orleans, La., and Florence, A. Ter., 0.26; Brookhaven, Miss., 0.28; South Puebla, Col., 0.31; Alpena, Mich., 0.36; Mesquite, Tex., 0.37; San Francisco, Cal., 0.38.

Heavy Rain-storms.—Heavy rains are reported as follows: On the 1st, in Pike County, Penn., and at Port Jervis, N. Y., extinguishing the forest fires reported in last review; 1st, heavy rain-storm at St. Louis; 5th, at Keytesville, Chariton county, Mo., accompanied by hail and high winds; 6th, at Dubuque, Iowa, with thunder and lightning; 8th, at Des Moines and Dubuque, Iowa.

Snow-fall.—The first snow of the season is reported on the 27th at Tivoli, N. Y., and on the 28th seen lying on the summit of the Catskill. A few flakes of snow fell at McMinville, Tenn., on the 30th; Marquette, 29th; Mt. Washington, 9th, 26th, 27th; Pike's Peak, 4th, 15th, 16th, 17th, 18th, 27th, 28th; on Baldy Mountains, fifteen miles from Santa Fé, 19th, 24th.

Hail on the 1st, 18th, 29th at Fort Union, N. M.; 2nd, Quitman, Ga.; 3rd, Fort Bridger, Wyoming Ter., and Virginia City, M. T.; 6th, Fort Hartsuff and North Platte, Neb.; 8th, De Soto, Neb.; 15th, Spartanburg, S. C., "stones varying in size from that of a cherry to a goose egg;" 18th and 27th, Genoa, Neb.; 23rd, Independence, Ia.; 27th, Fall River, Mass., and Madison Barracks, N. Y.; 29th, Fort Niagara, N. Y.; 30th, Purdy, Tenn.; 29th and 30th, Cleveland and Davenport; 26th, Detroit and Escanaba; Pike's Peak, 1st, 16th, 17th, 26th, 27th, 28th.

Cloudy Days.—The number of days on which the cloudiness has equalled eight on a scale of 10, as reported by voluntary observers, averages as follows: South Atlantic States, 2-7; Middle States, 14; New England, 8-18; Lower Lakes, 15; Upper Lakes, 12; Ohio Valley, 9-19; Northwest, 5-12; Southwest, 1-3.

Rainy Days.—The number of days in which rain fell, as recorded at Signal Service stations, is—South Atlantic States, 7-12; Middle Atlantic States, 14-17; East Atlantic States, 11-15; Lower Lakes, 19-21; Upper Lakes, 10-16; Upper Mississippi valley, 12-16; Lower Missouri valley, 9-13; Southwest, 3-6.

Droughts.—The drought that prevailed in New England and the greater part of the Middle States during August ended with the rains of the first week in September. The deficiency in the Southwest is not generally reported as assuming the severity of a drought; a scarcity of water is reported from Corsicana.

Floods or Freshets—probably due to local rains, although not always so stated by the observer. On

the 8th, at Des Moines, Iowa; 9th, in vicinity of Dubuque, Iowa; 18th, in vicinity of Pittsburgh; 19th, in Nodaway river, eastern Missouri; 21st, Forrest county, Penn.; 24th, in the Pedee river, at Albemarle, N. C.; on the 25th, at Weldon, N. C., the Roanoke river was high.

RELATIVE HUMIDITY.

The mean relative humidity for the month, as reported from the Signal Service stations, ranges in New England from 69 to 75 per cent; Middle Atlantic States, 68 to 78; South Atlantic States, 70 to 78; Gulf States, (excepting Florida,) Tennessee, Arkansas and Indian Territory, 59 to 70; Lake region, 71 to 78; Ohio valley and Northwest, 66 to 76; Pacific coast, 71 to 77. It is, as usual, lowest at the Rocky Mountain stations, being 66 at Pike's Peak, 56 at Santa Fe, 41 at Denver and Virginia City, 40 at Cheyenne and 30 at Salt Lake City; the mean for Mt. Washington is 87; all uncorrected for altitude of stations.

WINDS.

Prevailing Winds.—The most frequent winds are shown by the arrows on chart No. II, and have been NW. in the central portion of the country between the Rocky and Alleghany Mountains, except S. in western Texas, Kansas and Nebraska; NE. and SW. winds have been pretty equally felt along the Atlantic coast.

Highest Winds.—Among the highest wind-velocities reported from the Signal Service Stations for the month, are the following: Cape Hatteras and Cape Lookout, (estimated, anemometer being broken), 17th, SE., 100 miles per hour; Kitty Hawk, 17th, S., 90; Cape Henry, SE., 78; New River, NC., 17th, NW., 75; Barnegat, E., 64; Wilmington, 17th, NW., 56; Norfolk, 17th, SE., 55; Atlantic City, 17th, E., 52; Philadelphia, 17th, 52; Sandy Hook, 17th, NE., 52; Mt. Washington, 90; Fort Gibson, 19th, W., 52; Pike's Peak, 8th, 49; Cape May, 17th, SE., 65.

Total Movements of the Air.—The following are the largest total movements of the air during the month, recorded at Signal Service stations: Cape May, 11,778 miles; Sandy Hook, 11,406; Barnegat, 11,027; Pike's Peak, 10,829; Cape Lookout, 10,247; Dodge City, 9,871; Cape Henry, 8,755; Breckenridge, 8,208; North Platte, 8,169; Philadelphia, 8,143; New York, 8,022. The smallest movements are: Vicksburg, 1,836; Augusta, 2,135; Savannah, 2,184; Nashville, 2,216; Lynchburgh, 2,310; Shreveport, 2,507; Portland, Or., 2,712; Montgomery, 2,920. These figures indicate the prevalence of highest winds on the Atlantic coast, from North Carolina to New Jersey, and also on the northwestern plains and the prevalence of feeblest winds in interior of the Southern States.

VERIFICATIONS.

Probabilities.—The comparison of the tri-daily published Probabilities with the telegraphic reports received during the succeeding twenty-four hours gives the following results: The percentage of verifications has averaged for New England, 83.4; Middle States, 87.1; South Atlantic States, 80.1; Eastern Gulf States, 84.4; Western Gulf States, 83.8; Tennessee and Ohio valley, 85.5; Lower Lake region, 85.1; Upper Lake region, 81.5; Upper Mississippi valley, 79.8; Lower Missouri valley, 76.95. The average for the whole country is 82.8 per cent. The general average for the respective elements is: For the Weather, 85.7; Direction of Wind, 83.8; Temperature, 79.2; Barometric Changes, 82.5. There were 31, or 0.86 per cent., omissions to predict.

Cautionary Signals.—During the month, 125 Cautionary Signals were ordered to be displayed at the Service Station stations on the Lakes, Gulf and Atlantic coasts. Of these, 3 were ordered late, 27 were reported not justified, and 95, or 76 per cent., were fully justified by high winds near the respective stations. Forty-three cases are reported of winds exceeding 25 miles, for which no Cautionary Signals were ordered.

NAVIGATION.

Height of Rivers.—The table on Chart No. III. gives the highest and lowest readings at the Signal Service river-gauges. The Red River and the Missouri, above Omaha, have experienced a steady decline. The lower Missouri, the Mississippi and Ohio have been occasionally swelled by the rains. The Ohio was highest from the 19th to 24th, and the Mississippi at Cairo rose pretty steadily from the 3rd to 21st, and at Memphis from the 5th to 23rd. At Keokuk, the river very nearly reached the "danger-line" on the 10th, and the Ohio rose slightly above "danger-lines" on the 19th at Pittsburgh, and 23rd at Cincinnati.

The Signal Service Observers report that the east winds attending the hurricane of the 16th and 17th, caused unusually high water along the Atlantic coast; at Atlantic City, N. J., the highest water was reported on the 17th; at Pembina, Dak., the Red river of the north was unusually low during the latter part of the month; at Pittsburgh, Pa., the river was very low from the 1st to 9th, it rose rapidly on the 10th, when navigation was resumed. The voluntary observers report as follows. The water in Lake Michigan was extremely high on the 30th at North Point, Mich. The Connecticut river has been lower than ever before known: at Westminster, Vt., it was lowest on the 7th.

TEMPERATURE OF WATER.

As heretofore, the maximum and minimum temperatures, at or near the bottom, with the average depth of water, are given in the table on the lower right-hand corner of chart No. III. The *smallest ranges*